

## Ecological Site Description—Rangeland

Sandy, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East  
MLRA: 60B – Pierre Shale Plains, East  
R058AE003MT, R060BE574MT

**Site Name:** Sandy (Sy), 10–14 inches Mean Annual Precipitation (MAP)

**Site Number:** R058AE003MT, R060BE574MT

**Major Land Resource Areas:** 58A – Northern Rolling High Plains, North Part  
60B – Pierre Shale Plains, North Part

**Rangeland Resource Units:** 58AE – Sedimentary Plains, East  
60BE – Pierre Shale Plains, East

**1. Physiographic Features:** This ecological site occurs on nearly level to strongly sloping sedimentary plains, hills, terraces and fans. The slopes range 0–15% but are mainly less than 8%. This site occurs on all exposures. Aspect is not significant.

**Elevation (feet):** 1,900–3,500  
**Landform:** sedimentary plain, alluvial fan, terrace  
**Slope (percent):** 0–15, mainly less than 8  
**Depth to Water Table (inches):** greater than 60  
**Flooding:** mainly none  
**Ponding:** none  
**Runoff Class:** mainly low  
**Aspect:** not significant

**2. Climatic Features:** MLRAs 58A and 60B are considered to have a continental climate characterized by cold winters, hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature are typical. The climate is the result of this MLRA's location in the geographic center of North America. There are few natural barriers on the northern Great Plains and the winds move freely across the plains and account for rapid changes in temperature. Seasonal precipitation is often limiting for plant growth. Annual fluctuations in species composition and total production are typical depending on the amount and timing of rainfall. See Climatic Data Sheet MLRA 58A, east and 60B, for more details (Section II of the NRCS Field Office Technical Guide). For local climate station information, refer to <http://www.wcc.nrcs.usda.gov>.

**Frost-free period (32° F)-days:** 105–145  
**Freeze-free period (28° F)-days:** 125–170  
**Mean annual precipitation (MAP):** 10–14 inches

**3. Influencing Water Features:** None

**4. Associated sites:** Silty, Sandy-Steep, and Sands sites.

**5. Similar sites:** Sands, Silty, Sandy-Steep.

The Sands and Silty sites occupy similar landscape positions, differing mainly by texture.  
The Sandy-Steep site differs mainly by being on steeper slopes (>15%).

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**6. Soils:** These soils are coarse to fine sandy loams more than 20 inches deep. They are well drained, permeability is mostly moderate to moderately rapid, and effective rooting depth is greater than 20 inches. Available water holding capacity is mainly over 4 inches.

**Parent material (kind):** alluvium, residuum, eolian deposits

**Parent material (origin):** sandstone

**Surface textures:** Coarse to fine sandy loams

**Depth (inches):** greater than 20

**Soil surface permeability (inches per hour):** moderate (0.6–2.0) to moderately rapid (2.0–6.0)

**Available Water Holding Capacity to 40"(inches):** 4–8

**Drainage Class:** well

**Salinity/Electrical Conductivity (mmhos/cm):** non-saline (0–2)

**Sodium Absorption Ratio (SAR):** 0–4

**Reaction (pH) (1:1 water):** neutral to moderately alkaline (6.6–8.4)

**6a. Representative Soils:** Listed below are soils and map units which characterize this site in various counties. (Reference MT-165, Soil Interpretive Rating Report).

COUNTIES	TYPICAL SOILS	MAP UNIT
Big Horn	Alice fine sandy loam	Ar
Carter	Chinook sandy loam	83A, 83C, 83D
Carter	Busby fine sandy loam	70C, 70D
Custer	Busby fine sandy loam	27A, 27C
Custer	Chinook fine sandy loam	35C
Fallon	Busby fine sandy loam	70C, 70D
Fallon	Chinook sandy loam	83A, 83C, 83D
Garfield	Busby fine sandy loam	31C, 331C
Garfield	Chinook fine sandy loam	38C, 386C
McCone	Busby fine sandy loam	18, 19
Musselshell	Busby fine sandy loam	30C, 30D
Musselshell	Chinook fine sandy loam	90B
Prairie	Busby fine sandy loam	12, 13
Prairie	Chinook fine sandy loam	34
Rosebud	Busby fine sandy loam	44, 45
Rosebud	Chinook fine sandy loam	62, 63
Treasure	Treasure sandy loam	Ts, Tu

**7. Plant Community and Species Composition:** The physical aspect of this site in Historic Climax is that of a level to undulating grassland dominated by warm-season grasses, with forbs and shrubs occurring in small percentages. Approximately 75–80% of the annual production is from grasses and sedges, 10–15% from forbs, and 1–5% is from shrubs and half-shrubs. Canopy cover of shrubs is 0–5%.

TABLE 7a.—Major Plant Species Composition lists plant species composition and production by dry weight for the Historic Climax (HCPC) or Potential Plant Community (PPC) for this site. The Historic Climax or Potential Plant community has been determined by the study of rangeland relict areas, exclosures, or areas protected from excessive grazing. Total annual production has been derived from several data sources, and has been adjusted to represent a typical annual moisture cycle for the site. Reference for plant species names and symbols: USDA–NRCS PLANTS Database at <http://plants.usda.gov>.

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## 7a. Major Plant Species Composition – Historic Climax / Potential Plant Community

Common Name	Plant Symbol	Plant Group	Percent Comp.	Group Max. %	Mean Annual Precipitation (MAP) (inches)				
					10	11	12	13	14
					(lbs./acre)	(lbs./acre)	(lbs./acre)	(lbs./acre)	(lbs./acre)
Grasses and Sedges 75–80 %					800	1040	1280	1560	1840
Prairie sandreed	CALO	5	20-35		200-350	260-455	320-560	390-682	460-805
Little bluestem	ANSC10	1	15-25		150-250	195-325	240-400	292-488	345-574
Needleandthread	HECOC8	10	10-20		100-200	130-260	160-320	195-390	230-460
Big bluestem*	ANGE	1	5-10		0-T	0-T	80-160	98-195	115-230
Indian ricegrass	ACHY	2	0-5		0-50	0-65	0-80	0-98	0-115
Sand dropseed	SPCR	9	0-5		0-50	0-65	0-80	0-98	0-115
Sun sedge*	CAHE5	3	5-10		0-T	0-T	80-160	98-195	115-230
Threadleaf sedge	CAFI	12	5-10		50-100	65-130	80-160	98-195	115-230
Bluebunch wheatgrass **	PSSP6	2	5-60		50-600	65-780	80-960	98-1170	115-1380
Plains muhly	MUCU3	3	1-5		10-50	13-65	16-80	20-98	23-115
Western or Thickspike wheatgrass	PASM ELLAL	14	1-5		10-50	13-65	16-80	20-98	23-115
Prairie junegrass	KOMA	12	0-5 }	10	10-100 No more Than 50 for Any one	13-130 No more Than 65 for Any one	16-160 No more Than 80 for Any one	20-195 No more Than 98 for Any one	23-230 No more Than 115 for Any one
Sandberg bluegrass	POSE	12	0-5 }						
Blue grama	BOGR2	15	0-5 }						
Green needlegrass	NAVI4	2	0-5 }						
Needleleaf sedge	CADU6	16	0-5 }						
Other native grasses	2GP		0-5 }						
Red threeawn	ARPUL	11	0-T	T	T	T	T	T	T
Forbs 10–15 %					150	195	240	292	345
Black samson	ECAN2	21	1-5}	15	10-150 No more Than 50 for Any one	13-195 No more Than 65 for Any one	16-240 No more Than 80 for Any one	20-292 No more Than 98 for Any one	23-345 No more Than 115 for Any one
Scurfpea spp.	PSORA2	23	0-5}						
Purple prairieclover	DAPU5	21	1-5}						
Hairy goldenaster	HEVI4	23	0-5}						
Green sagewort	ARDR4	19	0-5}						
Stiff sunflower	HEPA19	19	0-5}						
Dotted gayfeather	LIPU	21	1-5}						
Missouri goldenrod	SOMI2	19	0-5}						
Prairie thermopsis	THRH	20	0-5}						
Buckwheat spp.	ERIOG	23	0-5}						
Prairie coneflower	RACO3	23	1-5}						
Scarlet globemallow	SPCO	20	0-5}						
Aster spp.	ASTER	19	1-5}						
White milkwort	POAL4	23	0-5}						
Western wallflower	ERAS2	24	0-5}						
Western yarrow	ACMI2	19	0-5}						
Hood's phlox	PHHO	28	0-5}						
Other native forbs	2FP		0-5}						
Death camas	ZIGAD	32	0-T	T	T	T	T	T	T
Shrubs and Half-shrubs 1–5 %					50	65	80	98	115
Winterfat	KRLA2	35	0-5}	5	10-50	13-65	16-80	20-98	23-115
Prairie rose	ROAR3	38	0-5}						
Silver sagebrush	ARCA13	36	0-5}						
Skunkbush sumac	RHTR	33	0-5}						
Wyoming big sagebrush	ARTRW8	37	0-5}						
Fringed sagewort	ARFR4	38	0-5}						
Yucca	YUGL	37	0-5}						
Other native shrubs	2SB		0-5}						
Plains pricklypear	OPPO	38	0-2 }	2	T-20	T-26	T-32	T-40	T-46
Brittle cactus	OPFR	38	0-2 }						
Broom snakeweed	GUSA2	37	0-2 }						
Total Annual Production (lbs./acre)			100%		1000	1300	1600	1950	2300

\* These species typically occur at 13" MAP or greater.

\*\* The percentage of bluebunch wheatgrass tends to increase in the western part of this range resource unit.

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**7b. Plant Group Descriptions:** Plant functional groups are based on: season of growth, growth form, stature, type of root system, and ecological response to disturbance. Refer to Field Office Technical Guide (FOTG) Section II for a complete description of plant groups.

**8. Total Annual Production:** Total annual production is a measurement of the total above ground production (dry weight) of all major plant species that occur on the site during a single growth year, regardless of accessibility to grazing animals. This information is listed at the bottom of TABLE 7a.—Major Plant Species Composition. Average production values are listed for each incremental inch of precipitation for the site.

**9. Cover and structure:** The following table shows the approximate amounts of basal cover, canopy cover, and plant heights for this site in the Historic Climax or Potential Plant Community.

COVER TYPE	BASAL COVER (%)	CANOPY COVER (%)	AVERAGE HEIGHT (inches)
Cryptogams	T – 1	0 – T	0.25
Grasses/ sedges	10 – 15	70 – 85	24
Forbs	1 – 4	5 – 10	18
Shrubs	T – 1	T – 5	24
Litter	40 – 50		
Coarse fragments	0 – 4		
Bare ground	20 – 25		

**10. Ecological Dynamics:** This site developed under Northern Great Plains climatic conditions, which included the natural influence of large herbivores and occasional fire. The plant community upon which interpretations are primarily based is the Historic Climax Plant Community (HCPC) or Potential Plant Community. This community is given as a reference to understand the original potential of this site, and is not always considered to be the management goal for every acre of rangeland. The following descriptions should enable the landowner or manager to better understand which plant communities occupy their land, and assist with setting goals for vegetation management. It can also be useful to understand the environmental and economic values of each plant community.

This site is considered highly resilient to disturbance as it has only minor soil limitations for plant growth. Changes may occur to the Historic Climax Plant Community due to management actions and/or climatic conditions. Under continued adverse impacts, a moderate decline in vegetative vigor and composition will occur. Under favorable vegetative management treatments the site can more readily return to the Historic Climax Plant Community.

Continual adverse impacts to this site over a period of years will result in the decrease of the taller, more palatable species such as **prairie sandreed and little bluestem**. These plants will be replaced by **needleandthread, sand dropseed, threadleaf sedge, blue grama, non-palatable forbs, and yucca**. Continued deterioration results in increased amounts of **red threeawn, green and fringed sagewort, and cactus**.

Plants that are not a part of the climax community that are most likely to invade are **cheatgrass, Japanese brome, six-weeks fescue, false buffalograss, broom snakeweed, thistles, leafy spurge, and knapweeds**.

**10a. Major Plant Community Types:** Following are descriptions of several plant communities that may occupy this site.

**Plant Community 1: Tall and Medium Grasses/ Forbs/ Shrubs:** This is the interpretive plant community and is considered to be the Historic Climax Plant Community (HCPC) or Potential Plant Community (PPC) for this site. This plant community contains a high diversity of tall and medium height grasses (**prairie sandreed,**

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**little bluestem, big bluestem, bluebunch wheatgrass** (western part of RRU), **needleandthread**, and **Indian ricegrass**), and short grasses and sedges (**sand dropseed, plains muhly, sun sedge, prairie junegrass, threadleaf sedge, and blue grama**). There are abundant forbs, shrubs, and half-shrubs which occur in small percentages.

This plant community is well adapted to the Northern Great Plains climatic conditions. The diversity in plant species and the presence of tall, deep-rooted perennial grasses allows for high drought tolerance. Individual species can vary greatly in production depending on growing conditions (timing and amount of precipitation and temperature). Plants on this site have strong, healthy root systems that allow production to increase significantly with favorable precipitation. Abundant plant litter is available for soil building and moisture retention. Plant litter is properly distributed with very little movement off-site and natural plant mortality is very low. This plant community provides for soil stability and a functioning hydrologic cycle.

**Plant Community 2: Medium and Short Grasses/ Shrubs and Half-shrubs:** Slight disturbances, minor climate shifts or slight variations in soils and/or topography can produce a plant community where **prairie sandreed and needleandthread** are co-dominant. Medium height grasses, short grasses and non-palatable forbs tend to become a slightly larger part of the plant community. Some of these other species include **thickspike or wheatgrass, threadleaf sedge, sand dropseed, and fringed and green sagewort**. **Yucca and Wyoming big sagebrush** can become slightly more prevalent.

Grass biomass production and litter become reduced on the site as the taller grasses disappear, increasing evaporation and reducing moisture retention. Additional open space in the community can result in undesirable invader species. This plant community provides for moderate soil stability.

**Plant Community 3: Medium and Short Grasses/ Half-shrubs:** With continued heavy disturbance the plant community tends to become dominated by **needleandthread** and short grasses such as **threadleaf sedge, sand dropseed and blue grama**. Forbs and half-shrubs, including **fringed and green sagewort**, tend to make up a larger part of the plant community. Less desirable species such as **red threeawn, plains pricklypear, brittle cactus, and yucca** begin to become common.

Plant Community 3 is less productive than Plant Community 1 or 2. The reduction in plant litter and shorter plant heights result in higher soil temperatures, poor water infiltration rates, and high evapotranspiration. This community can respond positively to improved grazing management but it will take additional inputs to move it towards a community similar in production and composition to that of Plant Community 1 or 2.

**Plant Community 4: Short Grasses/ Half-shrubs/ Annuals and Biennials:** This community is primarily composed of short grasses and sedges such as **threadleaf sedge and blue grama**. **Red threeawn and green and fringed sagewort** typically become major components of the community. A remnant of the potential plant community may remain, especially **needleandthread**, but in much smaller proportions. Species such as **cheatgrass, six-weeks fescue, false buffalograss, annual and biennial forbs, broom snakeweed, plains pricklypear, and brittle cactus** also become a common part of the community.

Plant Community 4 is substantially less productive than Plant Community 1 or 2. The lack of litter and short plant heights result in higher soil temperatures, poor water infiltration rates, and high evaporation, which gives **threadleaf sedge or blue grama** a competitive advantage over the cool season tall and medium grasses. This community has lost many of the attributes of a healthy rangeland, including good infiltration, minimal erosion and runoff, nutrient cycling and energy flow. Annual species are often aggressive and competitive with seedlings of perennial plants.

Significant economic inputs and time would be required to move this community toward a higher successional stage and a more productive plant community. Seeding is necessary to restore desirable native perennial species.

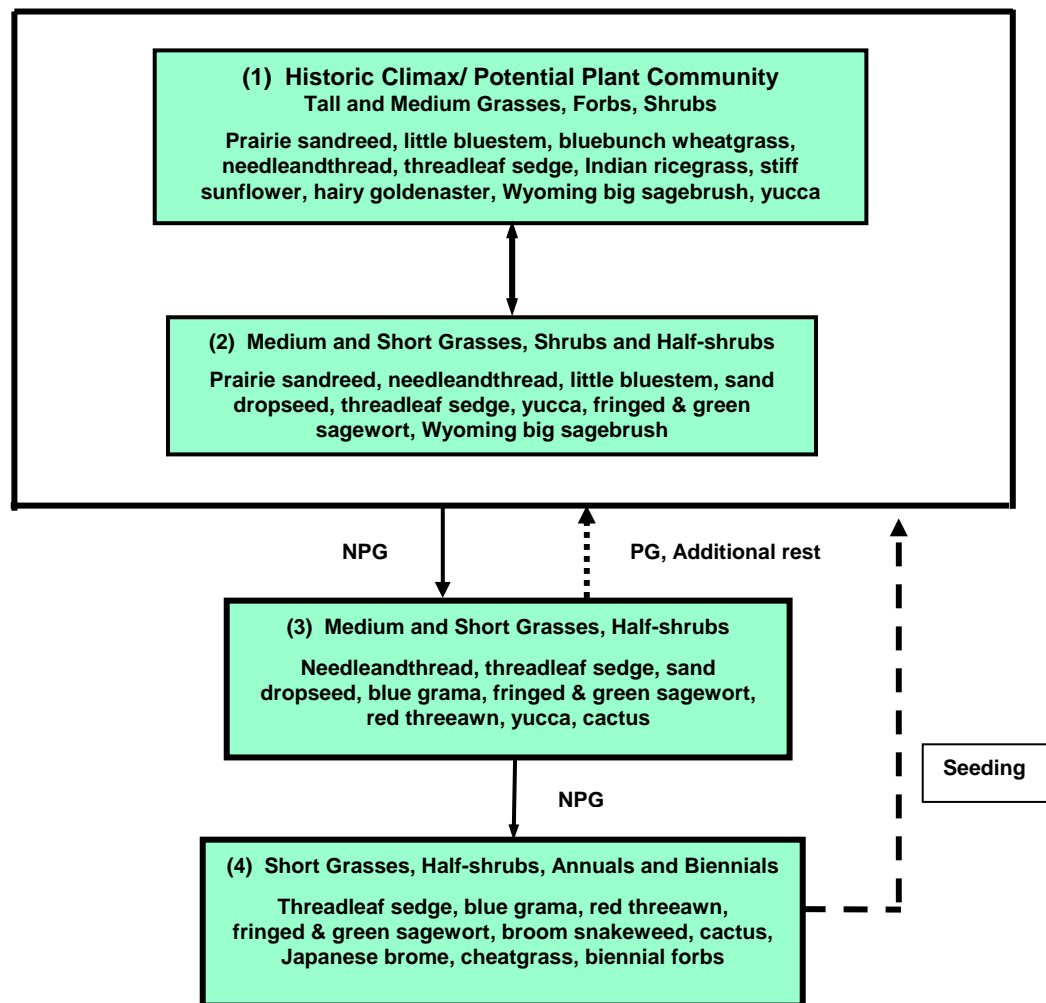
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**10b. Plant Communities and Transitional Pathways (State and Transition Model):** Transitions in plant community composition occur along a gradient that is not linear. Many processes are involved in the changes from one community to another. Changes in climate, elevation, soils, landform, fire patterns and frequency, and grazing all play a role in determining which of the plant communities will be expressed. The following model outlines some of the various plant communities that may occur on this site and provides a diagram of the relationship between plant community and type of use or disturbance.

## Plant Communities and Transitional Pathways (diagram)



Smaller boxes within a larger box indicate that these communities will normally shift among themselves with slight variations in precipitation and other disturbances. Moving outside the larger box indicates the community has crossed a threshold (heavier line) and will require intensive treatment to return to Community 1 or 2. Dotted lines indicate a reduced probability for success.

NOTE: Not all species present in the community are listed in this table. Species listed are representative of the plant functional groups that occur in the community.

PG = Prescribed Grazing: Use of a planned grazing strategy to balance animal forage demand with available forage resources. Timing, duration, and frequency of grazing are controlled and some type of grazing rotation is applied to allow for plant recovery following grazing.

NPG = Non-Prescribed Grazing: Grazing which has taken place that does not control the factors as listed above, or animal forage demand is higher than the available forage supply.

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**11. Plant Growth Curves:** Growth of native cool-season plants begins in April and continues to the end of June. Native warm-season plants begin growth about mid May and continue to about the end of August. Green up of cool-season plants can occur in September through October when adequate soil moisture is present. The following tables show the approximate percentage of total growth by month that is expected to occur in various plant communities on this site for a "typical" moisture year.

**Growth Curve Number: MT0810**

Growth Curve Description: Includes all eastern sedimentary plains sites in the 10 – 14" p.z. with deep, sandy textured upland soils, having mainly warm season plants.

**Totals for Each Month**

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	0	5	15	40	25	10	5	0	0	0

**Cumulative Totals by Month**

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	0	5	20	60	85	0	0	0	0	0

**Growth Curve Number: MT0813**

Growth Curve Description: Includes all low condition sites in eastern sedimentary plains sites, dominated by short grasses.

**Totals for Each Month**

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	0	25	25	25	10	10	5	0	0	0

**Cumulative Totals by Month**

Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
0	0	0	25	50	75	85	95	100	0	0	0

**12. Livestock Grazing Interpretations:** Managed livestock grazing is suitable on this site as it has the potential to produce an abundance of high quality forage. This is often a preferred site for grazing by livestock, and animals tend to congregate in these areas. In order to maintain the productivity of this site, stocking rates must be managed carefully on adjoining sites with less production to be sure livestock drift onto the Sandy site is not excessive. Management objectives should include maintenance or improvement of the plant community. Shorter grazing periods and adequate re-growth after grazing are recommended for plant maintenance and recovery. Heavy stocking and season-long use of this site can be detrimental and will alter the plant community composition and production over time.

Whenever Plant Community 2 occurs (medium and short grasses, shrubs and half-shrubs), grazing management strategies need to be implemented to avoid further deterioration. This community is still stable, productive, and healthy provided it receives proper management. This community will respond fairly quickly to improved grazing management including increased growing season rest of key forage plants. Grazing management alone can usually move this community back to one more similar to potential if a good seed source of the taller grasses still exists.

Plant Communities 3 and 4 have substantially reduced forage production, and a high percentage of aggressive, non-palatable species. Once these plant communities become established, it will be much more difficult to restore the site to a community that resembles the potential with grazing management alone. Additional growing season rest is often necessary for re-establishment of the desired species and to restore the stability and health of the site. Brush management and/or seeding will be necessary to restore desirable native perennial species back into Community 4.

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**12a. Calculating Safe Stocking Rates:** Proper stocking rates should be incorporated into a grazing management strategy that protects the resource, maintains or improves rangeland health, and is consistent with management objectives. Safe stocking rates will be based on useable forage production, and should consider ecological condition and trend of the site, and past grazing use history.

Calculations used to determine an initial stocking rate are based on the amount of useable forage available, taking into account the harvest efficiency of the animal and the grazing strategy to be implemented. Average annual production must be measured or estimated to properly assess useable forage production and stocking rates.

**12b. Guide to Safe Stocking Rates:** The following charts provide a guide for determining an initial safe stocking rate. Animal Unit Month (AUM) figures are based on averages of forage production from data collected for this site over several years. The characteristic plant communities and production values listed may not accurately reflect the productivity of a specific piece of land. Hence this table should not be used without on-site information collected to determine the average forage productivity of the site. Adjustments to stocking rates for each range unit must be made based on topography, slope, distance to livestock water, and other factors which effect livestock grazing behavior.



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## 12c. Stocking Rate Guide:

Major Plant Community Dominant Plant Species	MAP	Total Production (pounds/ac)	Cattle			Sheep		
			Forage Production	AUM/ac	Ac/AUM	Forage Production	AUM/ac	Ac/AUM
<b>1. Tall and Medium Grasses, Forbs, Shrubs (HCPC/PPC)</b>  <i>Prairie sandreed, little bluestem, bluebunch wheatgrass, needleandthread, Indian ricegrass, stiff sunflower, hairy goldenaster, Wyoming. big sagebrush, yucca</i>  (S.I. >70%)	13-14"	1950-2300	1650-1950+	50-.60+	1.7-2.0	1750-2100+	.55-.65+	1.5-1.8
	10-12"	1000-1600	850-1350+	.27-.42+	2.4-3.7	900-1400+	.28-.45+	2.2-3.6
<b>2. Medium and Short Grasses, Shrubs and Half-shrubs</b>  <i>Prairie sandreed, needleandthread, sand dropseed, threadleaf sedge, yucca, fringed &amp; green sagewort, Wyoming big sagebrush</i>  (S.I. 45–70%)	13-14"	1600-2000	1200-1700	.37-.54	1.9-2.7	1250-1800	.40-.55	1.8-2.5
	10-12"	850-1350	650-1150	.20-.36	2.8-5.0	700-1200	.22-.38	2.6-4.5
<b>3. Medium and Short Grasses, Half-shrubs</b>  <i>Needleandthread, threadleaf sedge, sand dropseed, blue grama, fringed &amp; green sagewort, red threeawn, cactus, yucca</i>  (S.I. 30–50%)	10-14"	750-1500	500-1100	.15-.35	2.8-6.7	550-1200	.17-.38	4.5-5.9
<b>4. Short Grasses, Half-shrubs, Annual and Biennial Forbs</b>  <i>Threadleaf sedge, blue grama, red threeawn, fringed &amp; green sagewort, broom snakeweed, cactus, Japanese brome, cheatgrass, biennial forbs</i>  (S.I. < 30%)	10-14"	500-1100	250-600	.05-.13	7.7-20.0	350-700	.08-.16	6.2-12.5

Stocking rates are calculated from average forage production values using a 25% Harvest Efficiency factor for preferred and desirable plants, and 10% Harvest Efficiency for less desirable species. AUM calculations are based on 790 pounds per animal unit month (AUM) for a 1,000-pound cow with calf up to 4 months. No adjustments have been made for site grazability factors, such as steep slopes, site inaccessibility, or distance to drinking water.

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## 12d. Plant Forage Preferences for Cattle and Sheep

**Legend:** P=Preferred D=Desirable U=Undesirable E=Emergency  
N=Nonconsumed T=Toxic Blank=Unknown or no data

Winter (W) = Jan., Feb., March;

Summer (SU) = July, Aug., Sept.;

Spring (SP) = April, May, June;

Fall (F) = Oct., Nov., Dec.

	Cattle				Sheep			
PLANT NAME	W	SP	SU	F	W	SP	SU	F
Prairie sandreed	D	D	D	D	D	D	D	D
Little bluestem	P	P	P	P	U	D	D	U
Bluebunch wheatgrass	P	D	P	P	D	D	D	D
Indian ricegrass	P	P	P	P	P	P	P	P
Big bluestem	P	P	P	P	P	P	P	P
Western wheatgrass	P	D	D	P	D	D	D	D
Thickspike wheatgrass	P	P	P	P	P	P	P	P
Needleandthread <sup>1/</sup>	D	D	D	D,T	D	D	D	D
Green needlegrass	P	P	P	P	P	P	P	P
Sand dropseed	D	D	D	D	D	D	D	D
Sandberg bluegrass	D	D	D	D	D	D	D	D
Sun sedge	D	P	D	P	D	D	D	D
Threadleaf and Needleleaf sedge	D	P	P	D	D	P	P	D
Plains muhly	D	D	D	D	D	D	D	D
Prairie junegrass	D	D	D	D	D	P	D	D
Blue grama	D	D	D	D	D	P	P	D
Red threeawn	N	U	N	N	N	U	N	N
Cheatgrass <sup>2/</sup>	U	D	N	N	U	P	U	U
Black samson	N	D	D	D	D	P	P	D
Prairieclover spp.	N	D	D	D	D	D	D	D
Dotted gayfeather	N	P	P	P	D	P	D	D
Hairy goldenaster	N	N	N	N	N	U	U	N
Prairie coneflower	N	D	D	D	D	D	D	D
Scurfpea spp.	N	N	N	N	U	U	U	U
Stiff sunflower	D	D	D	D	P	P	P	P
Green sagewort	N	N	N	N	N	N	N	N
Scarlet globemallow	N	D	D	D	N	D	D	D
Missouri goldenrod	N	U	N	N	P	P	P	P
Prairie thermopsis	N	N	N	N	N	N	N	N
Buckwheat spp.	N	N	N	N	D	D	D	D
Aster spp.	N	U	N	N	D	D	D	D
White milkwort	N	N	N	N	N	N	N	N
Western yarrow	N	N	N	N	N	N	N	N
Death camas	N	T	T	N	N	T	T	N
Winterfat	P	P	P	P	P	D	D	P
Skunkbush sumac	N	N	N	N	N	N	N	N
Prairie rose	N	N	N	N	D	D	D	D
Silver sagebrush	D	D	D	D	D	D	D	D
Wyoming big sagebrush	N	N	N	N	P	D	D	P
Fringed sagewort	N	N	N	N	U	U	U	U
Yucca	N	N	N	N	U	D	D	U
Broom snakeweed <sup>3/</sup>	N	N	N	U	U	U	U	U
Plains pricklypear, brittle cactus <sup>4/</sup>	N	N	N	N	U	U	U	U

<sup>1/</sup> The awns and sharp seeds of needleandthread can harm livestock when dry.

<sup>2/</sup> Not a native plant, but a common invader.

<sup>3/</sup> Some species of milkvetch are poisonous.

<sup>4/</sup> Greasewood can be toxic to sheep in spring if large quantities are ingested.

<sup>5/</sup> Broom snakeweed can be poisonous, but this is not usually a problem in Montana because plants die back in winter and do not have green leaves in early spring.

<sup>6/</sup> The spines can be injurious to livestock.

## Ecological Site Description—Rangeland

Sandy, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East  
MLRA: 60B – Pierre Shale Plains, East  
R058AE003MT, R060BE574MT

**13. Wildlife Interpretations:** The following is a description of habitat values for the different plant communities that may occupy the site:

**Plant Community 1: Tall & Medium Grasses/ Forbs/ Shrubs (HCPC or PPC):** The predominance of grasses and diversity of forbs, shrubs and half-shrubs in this community favors grazers and mixed feeders such as bison, pronghorn and elk. Suitable thermal and escape cover for mule deer is limited because of low shrub cover. Large animal nutrition levels are relatively high year-long with the diversity of plant life forms and seasonality. When this plant community is adjacent to large blocks of sagebrush-grassland, it can provide quality sage grouse lek sites and brood habitat. The complex plant structural diversity provides habitat for a wide array of small mammals and neotropical migratory birds. Diverse prey populations are available for raptors such as short-eared owls and American kestrels. The mix of grass stature and life forms along with scattered shrubs and a variety of forbs provides habitat for many bird species including the upland sandpiper, sharp-tailed grouse, loggerhead shrike, Baird's, grasshopper and savanna sparrow, chestnut-collared longspur and western meadowlark. This community is especially favorable for ground-nesting birds because of the abundant residual spring cover and litter cover available for nesting, escape and thermal cover.

**Plant Community 2: Medium and Short Grasses/ Shrubs and Half-shrubs:** The partial loss of structural diversity makes this plant community somewhat less attractive to the variety of wildlife species using the HCPC. A decrease in residual plant material and litter cover is usually associated with degradation of the HCPC, which makes this community less attractive for ground-nesting birds. The predominance of mixed grass species plus scattered shrubs can be attractive habitat for Baird's and grasshopper sparrows. Pronghorn may make considerable use of this type because of forb availability in the generally open landscape.

**Plant Community 3: Medium and Short Grasses/ Half-shrubs:** Sparser vegetation and greater coverage of bare ground provides suitable habitat for mountain plovers, horned larks and McCown's longspurs. However, a lack of complex vegetation structure and residual cover makes this community poor habitat in general for most ground-nesting birds and relatively poor big game habitat. Pronghorn may forage in this community spring through fall.

**Plant Community 4: Short Grasses/ Half-shrubs/ Annuals and Biennials:** This community has low habitat value for most wildlife species. It may be important in providing lek sites for sage grouse when adjacent to sagebrush stands and provides forage for pronghorn seasonally. Ground-nesting birds favoring sparse vegetation, such as the long-billed curlew and mountain plover, may use this community.

# Ecological Site Description—Rangeland

Sandy, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East

MLRA: 60B – Pierre Shale Plains, East

R058AE003MT, R060BE574MT

## 13a. Plant Preferences for Antelope and Deer:

**Legend:** P=Preferred D=Desirable U=Undesirable E=Emergency  
N=Nonconsumed T=Toxic Blank=Unknown or no data

Winter (W) = Jan., Feb., March;

Summer (SU) = July, Aug., Sept.;

Spring (SP) = April, May, June;

Fall (F) = Oct., Nov., Dec.

PLANT NAME	Antelope				Deer			
	W	SP	SU	F	W	SP	SU	F
Perennial grasses	P	P	P	P	D	P,D	D	D
Red threeawn	N	N	N	N	N	N	N	N
Annual grasses	N	P,D	N	D	N	P,D	N	D
Sedges	D	P	P	P	D	P	P	P
Black samson	P	P	P	P	D	D	D	D
Prairieclover spp.	P	P	P	P	P	P	P	P
Dotted gayfeather	D	P	D	D	D	P	P	P
Milkvetch spp.	D	P	P	D	D	D	D	D
Scurfpea spp.	N	D	D	D	D	D	D	D
Hairy goldenaster	E	E	E	E	E	E	E	E
Goldenrod spp.	D	P	P	P	D	D	D	D
American licorice	P	P	D	D	D	P	D	D
Prairie coneflower	D	P	P	D	D	P	D	D
American vetch	P	P	P	P	D	P	P	P
Hood's phlox	U	U	U	U	U	U	U	U
Wild parsley	U	D	U	U	U	D	U	U
Green sagewort	N	N	N	N	N	N	N	N
Scarlet globemallow	D	D	D	D	D	D	D	D
Death camas	N, T	N, T	N, T	N, T	N, T	N, T	N, T	N, T
Winterfat	P	P	P	P	P	P	P	P
Prairie rose	U	U	U	U	E	D	E	E
Silver sagebrush	D	D	P	D	P	P	D	P
Wyoming big sagebrush	P	P	P	P	P	P	D	D
Rabbitbrush spp.	D	D	D	D	D	D	D	D
Fringed sagewort	D	U	U	D	D	U	U	D
Green sagewort	N	N	N	N	N	N	N	N
Plains pricklypear, brittle cactus	N	N	N	N	N	N	N	N
Broom snakeweed	N	N	D	N	D	D	P	P

**14. Hydrology Data:** The soils associated with this ecological site are generally in Hydrologic Soil Group B. The infiltration rates for these soils will normally be moderate to moderately rapid. The runoff potential for this site is low, depending on slope and ground cover/health. Runoff curve numbers generally range from 65 to 83.

Good hydrologic conditions exist on rangelands if plant cover (grass, litter, and brush canopy) is greater than 70%. Fair conditions exist when cover is between 30 and 70%, and poor conditions exist when cover is less than 30%. Sites in high similarity to HCPC (Plant Communities 1 and 2) generally have enough plant cover and litter to optimize infiltration, minimize runoff and erosion, and have a good hydrologic condition. The deep root systems of the potential vegetation help maintain or increase infiltration rates and reduce runoff.

Sites in low similarity (Plant Communities 3 and 4) are generally considered to be in poor hydrologic condition as the majority of plant cover is from shallow-rooted species such as threadleaf sedge, annuals, and half-shrubs.

# Ecological Site Description—Rangeland

Sandy, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East  
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R058AE003MT, R060BE574MT

Erosion is minor for sites in high similarity. Rills and gullies should not be present. Water flow patterns, if present, will be barely observable. Plant pedestals are essentially non-existent. Plant litter remains in place and is not moved by erosion. Soil surfaces should not be compacted or crusted. Plant cover and litter helps retain soil moisture for use by the plants. Maintaining a healthy stand of perennial vegetation will optimize the amount of precipitation that is received. (Reference: Engineering Field Manual, Chapter 2 and Montana Supplement 4).

**15. Recreation and Natural Beauty:** This site provides recreational opportunities for big game and upland bird hunting, and hiking. The forbs have flowers that appeal to photographers. This site provides valuable open space and visual aesthetics.

## 16. Site Documentation:

**Authors:** Original: REL, AJN, 1983      Revised: JVF, REL, RSN, MJR, SKW, SVF, POH, 2003

## Supporting Data for Site Development:

NRCS-Production & Composition Record for Native Grazing Lands (Range-417): 9  
BLM Soil & Vegetation Inventory Method (SVIM) Data: 12  
NRCS-Range Condition Record (ECS-2): 25  
NRCS Range/Soil Correlation Observations & Soil 232 notes: 62

## Field Offices where this site occurs within the state:

Baker	Ekalaka	Hysham	Sidney
Billings	Forsyth	Jordan	Terry
Broadus	Glendive	Miles City	Wibaux
Circle	Hardin	Roundup	

**Site Approval:** This site has been reviewed and approved for use:

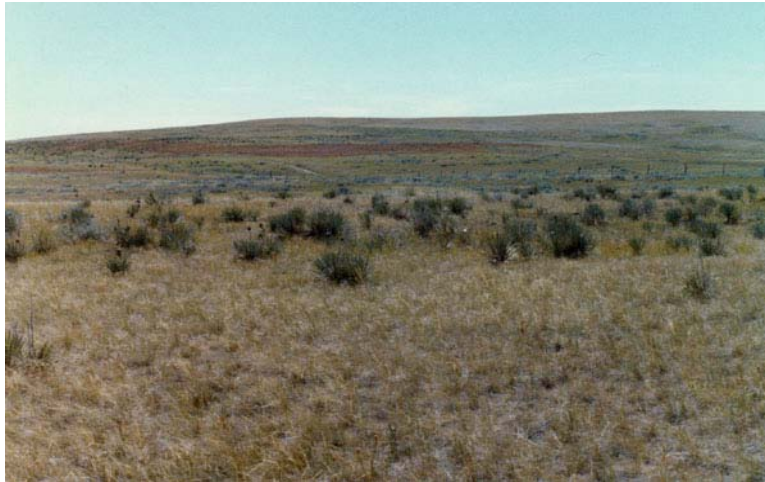
Rhonda Sue Noggles  
State Rangeland Management Specialist

06/30/03  
Date

## Ecological Site Description—Rangeland

Sandy, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East  
MLRA: 60B – Pierre Shale Plains, East  
R058AE003MT, R060BE574MT



**Sandy 10-14",  
Sedimentary Plains, east  
Plant Community 1  
HCPC /PPC**



**Sandy 10-14"  
Sedimentary Plains, east  
Plant Community 1  
HCPC /PPC  
McCone County**



**Sandy 10-14"  
Sedimentary Plains, east  
Plant Community 1  
HCPC /PPC  
Prairie sandreed**



## Ecological Site Description—Rangeland

Sandy, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East  
MLRA: 60B – Pierre Shale Plains, East  
R058AE003MT, R060BE574MT



**Sandy 10-14",  
Sedimentary Plains, east  
Plant Community 1  
HCPC /PPC  
Prairie County**



**Sandy 10-14",  
Sedimentary Plains, east  
Plant Community 2  
Prairie County**



**Sandy 10-14",  
Sedimentary Plains, east  
Plant Community 2  
Dawson County  
Needleandthread**

## Ecological Site Description—Rangeland

Sandy, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East  
MLRA: 60B – Pierre Shale Plains, East  
R058AE003MT, R060BE574MT



**Sandy 10-14"**  
**Sedimentary Plains, east**  
**Plant Community 2**  
**Prairie County**



**Sandy 10-14"**  
**Sedimentary Plains, east**  
**Plant Community 3**  
**Custer County**



**Sandy 10-14"**  
**Sedimentary Plains, east**  
**Plant Community 3**  
**Prairie County**



## Ecological Site Description—Rangeland

Sandy, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East  
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R058AE003MT, R060BE574MT



**Sandy 10-14"**  
**Sedimentary Plains, east**  
**Plant Community 3**  
**Red threeawn, threadleaf sedge**



**Sandy 10-14"**  
**Sedimentary Plains, east**  
**Plant Community 3**  
**Prairie County**  
**Green sagewort**



**Sandy 10-14"**  
**Sedimentary Plains, east**  
**Plant Community 4**  
**Carter County**

## Ecological Site Description—Rangeland

Sandy, 10–14" MAP

MLRA: 58A – Sedimentary Plains, East  
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R058AE003MT, R060BE574MT



**Sandy 10-14"**  
**Sedimentary Plains, east**  
**Plant Community 4**  
**Blue grama, threadleaf sedge**



**Sandy 10-14"**  
**Sedimentary Plains, east**  
**Plant Community 4**  
**Threadleaf sedge, yucca**